Docket No.: MESH019

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

Before the Board of Patent Appeals and Interferences

Ex Parte:	Robin U. Roberts
Application Number:	09/939,624
Filing Date:	August 28, 2001
Title:	SYSTEM AND METHOD FOR ENABLING A RADIO NODE TO SELECTABLY FUNCTION AS A ROUTER IN A WIRELESS COMMUNICATIONS NETWORK
Confirmation No.	4515
Art Unit:	2617
Examiner:	Genack, Matthew W.

BRIEF ON BEHALF OF APPELLANTS UNDER 37 CFR 41.37

Randi L. Karpinia
Attorney of Record

Motorola, Inc.
Patent Operations
Law Department
8000 West Sunrise Blvd.
Fort Lauderdale, FL 33322

Telephone: 954-723-6449
Facsimile: 954-723-3871

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I. REAL PARTY IN INTEREST

The name of the real parties in interest for purposes of this appeal is MeshNetworks, Inc., a Delaware corporation, the assignee of record and Motorola, Inc. a Delaware corporation.

II. RELATED APPEALS AND INTERFERENCES

There are no other appeals or interferences known to the Applicant, the Applicant's legal representative, or assignee which would directly affect or be directly affected by or have a bearing on the Board's decision in this pending appeal.

III. STATUS OF CLAIMS

Claims 1-38 are cancelled. Claims 39-62 remain in the application. Claims 39-62 are being appealed. Claims 39-62 stand or fall together.

In a final Office Action dated November 13, 2006, the Examiner rejected Claims 39-41, 43-47, 52-55, and 57-59 under 35 U.S.C. §103 (a) as being unpatentable over Orava (U.S. Patent Application Publication 2002/0071477) in view of Bensaou et al (U.S. Patent No. 6,934,297). The Examiner further rejected Claims 42 and 56 under 35 U.S.C. 103(a) as being unpatentable over Orava (U.S. Patent Application Publication 2002/0071477) in view of Bensaou et al (U.S. Patent No. 6,934,297) further in view of Susnow et al (U.S. Patent Application Publication 2002/0159385). The Examiner further rejected Claims 48-50 and 60-62 under 35 U.S.C. 103(a) as being unpatentable over Orava (U.S. Patent Application Publication 2002/0071477) in view of Bensaou et al (U.S. Patent No. 6,934,297) further in view of Larsen et al (U.S. Patent No. 6,810,428). The Examiner further rejected Claim 51 under 35 U.S.C. 103(a) as being unpatentable over Orava (U.S. Patent Application Publication 2002/0071477) in view of Bensaou et al (U.S. Patent No. 6,934,297) further in view of Stanforth, U.S. Patent Application Publication 2003/0045295.

IV. STATUS OF AMENDMENTS

No amendments to the claims have been made subsequent to the Final Office Action mailed November 13, 2006.

V. SUMMARY OF CLAIMED SUBJECT MATTER

Although specification citations are inserted below in accordance with 37 C.F.R. § 41.37, these reference numerals and citations are merely examples of where support may be found in the specification for the terms used in this section of the brief. There is no intention to in any way suggest that the terms of the claims are limited to the examples in the specification. Although, as demonstrated by the reference numerals and citations below, the claims are fully supported by the specification as required by law, it is improper under the law to read limitations from the specification into the claims. Pointing out specification support for the claim terminology, as is done here to comply with rule 41.37, does not in any way limit the scope of the claims to those examples from which they find support. Nor does this exercise provide a mechanism for circumventing the law precluding reading limitations into the claims from the specification. In short, the reference numerals and specification citations are not to be construed as claim limitations or in any way used to limit the scope of the claims.

The invention, as defined in independent Claim 39 is an adhoc multi-hopping wireless communications network (100) comprising: a plurality of nodes (102) communicatively coupled within the adhoc wireless communication network (100), wherein each of the plurality of nodes (102) has an operational state comprising: an off state, an active and relay state, or an active and non-relay state, (see, for example, paragraphs [0022] to [0027] of Applicant's original specification) the plurality of nodes (102) comprising one or more categories of nodes, wherein each category of node defines the operational state for each node within the category, (see, for example, paragraphs [0023] to [0026] of Applicant's original specification) and further wherein, the operational state of each of the plurality of nodes (102) can be dynamically determined by one or more immediate neighbor nodes during route establishment dependent upon the category of the originating node (see, for example, paragraphs [0026] and [0027] of Applicant's original specification).

The invention, as defined in independent Claim 52 is an adhoc multi-hopping wireless communications network (100) comprising: a plurality of nodes (102) communicatively coupled

within the adhoc wireless communication network (100), wherein each of the plurality of nodes (102) has an operational state comprising: an off state, an active and relay state, or an active and non-relay state, (see, for example, paragraphs [0022] to [0027] of Applicant's original specification) wherein each of the plurality of nodes (102) is adapted to: determine its operational state, and inform one or more immediate neighbor nodes of the operational state (see, for example, paragraphs [0028] to [0029] of Applicant's original specification).

Accordingly, the invention as defined by independent Claims 39 and 52 includes each node of an adhoc networking having the ability to operate in one of a variety of operational states including an off state, an active and relay state, or an active and non-relay state. The ad-hoc node can operate while either relaying to not relaying although still remaining active in the network. These claimed features are not disclosed in the references cited by the Examiner.

VI. GROUNDS OF REJECTION TO BE REVIEWED ON APPEAL

A. Whether Claims 39-41, 43-47, 52-55, and 57-59 are allowable under 35 U.S.C. §103(a) over Orava (U.S. Patent Application Publication 2002/0071477) in view of Bensaou et al (U.S. Patent No. 6,934,297).

B. Whether Claims 42 and 56 are allowable under 35 U.S.C. 103(a) over Orava (U.S. Patent Application Publication 2002/0071477) in view of Bensaou et al (U.S. Patent No. 6,934,297) further in view of Susnow et al (U.S. Patent Application Publication 2002/0159385).

C. Whether Claims 48-50 and 60-62 are allowable under 35 U.S.C. 103(a) over Orava (U.S. Patent Application Publication 2002/0071477) in view of Bensaou et al (U.S. Patent No. 6,934,297) further in view of in view of Larsen et al (U.S. Patent No. 6,810,428).

D. Whether Claim 51 is allowable under 35 U.S.C. 103(a) over Orava (U.S. Patent Application Publication 2002/0071477) in view of Bensaou et al (U.S. Patent No. 6,934,297) further in view of Stanforth, U.S. Patent Application Publication 2003/0045295.

VII. ARGUMENT

A. Claims 39-41, 43-47, 52-55, and 57-59 are allowable under 35 U.S.C. §103(a) over Orava (U.S. Patent Application Publication 2002/0071477) in view of Bensaou et al (U.S. Patent No. 6,934,297).

To establish a prima facie case of obviousness, and hence to find Claims 39-41, 43-47, 52-55, and 57-59 not allowable under 35 USC 103(a) over Orava (U.S. Patent Application Publication 2002/0071477) in view of Bensaou et al (U.S. Patent No. 6,934,297), three basic criteria must be met. First, there must be some suggestion or motivation, either in the references themselves or in the knowledge generally available to one of ordinary skill in the art, to modify the reference or to combine reference teachings. Second, there must be a reasonable expectation of success. Finally, the prior art reference (or references when combined) must teach or suggest all of the claim limitations. The teaching or suggestion to make the claimed combination and the reasonable expectation of success must both be found in the prior art, and not be based upon applicant's disclosure. MPEP at § 2142.

In the present case, all three criteria for establishing a prima facie case of obviousness are not met because the teachings of Orava (U.S. Patent Application Publication 2002/0071477) and of Bensaou et al (U.S. Patent No. 6,934,297) references, taken singly or in combination, do not teach or suggest all of the claim limitations recited in the Claims 39-41, 43-47, 52-55, and 57-59.

Specifically, with respect to independent Claims 39 and 52, the teachings of Orava (U.S. Patent Application Publication 2002/0071477) and of Bensaou et al (U.S. Patent No. 6,934,297) references, taken singly or in combination, do not teach or suggest the novel capability which Applicant's claimed invention provides to ad-hoc networks comprising the ability for ad-hoc nodes not to act as relay nodes (routers) to participate in

the network. According to Applicant's invention, an ad-hoc node can operate within the network while acting as a relay or not acting as a relay although still remaining active in the network in either case. Orava (U.S. Patent Application Publication 2002/0071477) in view of Bensaou et al (U.S. Patent No. 6,934,297), in contrast, always requires ad-hoc nodes to be relay agents. Applicant's invention allows a node to dynamically move between these modes.

In item 3, page 2, of the Office Action of November 13, 2006, the Examiner characterizes Orava's wireless devices operating in a standby state or a connection state as being the same as Applicant's claimed invention of the nodes operating in a connection but non-relay state. Applicant respectfully disagrees with the Examiner's characterization. As the Examiner states, the node is either in standby or in operation in Orava, therefore, the ability of the node to be in a non-relay but active state is not discussed nor anticipated by Orava.

Applicants submit that Claims 40-41, 43-47, 53-55, and 57-59 are allowable over the cited references based on their dependencies upon claims 39 and 52 which claims were shown to be allowable above. In addition, Applicants submit that claims 40-41, 43-47, 53-55, and 57-59 are also independently patentable because they include limitations not taught or suggested by the cited reference.

As an example, in Claims 46 and 58, Applicant recites two classes of devices, infrastructure and non-infrastructure, that the former is by nature a relaying device, the latter is not, and their relaying state is set based on their class. In claims 47 and 59. Applicant claims separate groups of devices, and that the relaying state is set based on membership in the group. The teachings of the Orava (U.S. Patent Application Publication 2002/0071477) and the Bensaou et al (U.S. Patent No. 6,934,297) references do not describe nor anticipate such network structure and operation.

Therefore, because the teachings of the Orava (U.S. Patent Application Publication 2002/0071477) and the Bensaou et al (U.S. Patent No. 6,934,297) references, taken singly or in combination, do not teach or suggest all of the claim limitations recited in the Claims 39-41, 43-47, 52-55, and 57-59, the rejection of Claims 39-41, 43-47, 52-55, and 57-59 under 35 U.S.C. 103(a) over Orava (U.S. Patent Application Publication 2002/0071477) in view of Bensaou et al (U.S. Patent No. 6,934,297) is improper and should be withdrawn.

B. Claims 42 and 56 are allowable under 35 U.S.C. 103(a) over Orava (U.S. Patent Application Publication 2002/0071477) in view of Bensaou et al (U.S. Patent No. 6,934,297) further in view of Susnow et al (U.S. Patent Application Publication 2002/0159385).

To establish a prima facie case of obviousness, and hence to find 42 and 56 not allowable under 35 U.S.C. 103(a) over Orava (U.S. Patent Application Publication 2002/0071477) in view of Bensaou et al (U.S. Patent No. 6,934,297) further in view of Susnow et al (U.S. Patent Application Publication 2002/0159385), three basic criteria must be met. First, there must be some suggestion or motivation, either in the references themselves or in the knowledge generally available to one of ordinary skill in the art, to modify the reference or to combine reference teachings. Second, there must be a reasonable expectation of success. Finally, the prior art reference (or references when combined) must teach or suggest all of the claim limitations. The teaching or suggestion to make the claimed combination and the reasonable expectation of success must both be found in the prior art, and not be based upon applicant's disclosure. MPEP at § 2142.

In the present case, all three criteria for establishing a prima facie case of obviousness are not met because the teachings of the Orava (U.S. Patent Application Publication 2002/0071477), Bensaou et al (U.S. Patent No. 6,934,297), and Susnow et al (U.S. Patent Application Publication 2002/0159385) references, taken singly or in

combination, do not teach or suggest all of the claim limitations recited in the Claims 42 and 56.

Applicants submit that Claims 42 and 56 are allowable over the cited references based on their dependencies upon claims 39 and 52 which claims were shown to be allowable above. In addition, Applicants submit that claims 42 and 56 are also independently patentable because they include limitations not taught or suggested by the cited reference.

Further, applicant respectfully submits that Orava in view of Bensaou et al in view of Suslow does not anticipate Applicant's invention as claimed in the further limitations of claims 42 and 56. Specifically, the credit system described by Suslow is a flow control mechanism to control the number of packets sent to an intermediate node by a source node [0048]. This number is dynamically updated as the intermediate node empties it's buffers, allowing the source node to send more packets [0049]. This provides the intermediate node temporary relief when the source node sends more packets than can be handled, a form of congestion control.

Applicant's invention of claims 42 and 46 are an economic credit [0037] for helping in the multi-hop network. When the maximum credits are accumulated, the node stops helping in the network (changes from relaying to non-relaying). The node continues to participate in the network, it just doesn't help as a relay point for other nodes. This is not done to prevent inundation of the node, simply to limit the economic credit that can be received. Applicant respectfully submits that it would not be obvious to one of ordinary skill to extend the concept of flow control to economic credits. Plus, intermediate nodes in Suslow cannot completely stop relaying without breaking the network, it's only a temporary condition. In Applicant's network, a node can stop relaying and still participate in the network. Other nodes will simply find an alternate route. An economic credit system has no relation to flow control. The reason for

economic credits is the different goals for the network vs. the user. In a multi-hop network, relaying packets can be important to the network, but can be detrimental to a user, so the credits provide the economic incentive for a user to relay packets. The maximum value is present only to limit economic exposure by the network operator.

Therefore, since some elements are missing from the Orava (U.S. Patent Application Publication 2002/0071477), Bensaou et al (U.S. Patent No. 6,934,297), and Susnow et al (U.S. Patent Application Publication 2002/0159385) references, a rejection of Claims 42 and 56 under 35 U.S.C. § 103(a) over Orava (U.S. Patent Application Publication 2002/0071477), in view of Bensaou et al (U.S. Patent No. 6,934,297), further in view of Susnow et al (U.S. Patent Application Publication 2002/0159385) is improper and should be withdrawn.

C. Claims 48-50 and 60-62 are allowable under 35 U.S.C. 103(a) over Orava (U.S. Patent Application Publication 2002/0071477) in view of Bensaou et al (U.S. Patent No. 6,934,297) further in view of in view of Larsen et al (U.S. Patent No. 6,810,428).

To establish a prima facie case of obviousness, and hence to find Claims 48-50 and 60-62 not allowable under 35 U.S.C. 103(a) over Orava (U.S. Patent Application Publication 2002/0071477) in view of Bensaou et al (U.S. Patent No. 6,934,297) further in view of in view of Larsen et al (U.S. Patent No. 6,810,428), three basic criteria must be met. First, there must be some suggestion or motivation, either in the references themselves or in the knowledge generally available to one of ordinary skill in the art, to modify the reference or to combine reference teachings. Second, there must be a reasonable expectation of success. Finally, the prior art reference (or references when combined) must teach or suggest all of the claim limitations. The teaching or suggestion to make the claimed combination and the reasonable expectation of success must both be found in the prior art, and not be based upon applicant's disclosure. MPEP at § 2142.

In the present case, all three criteria for establishing a prima facie case of obviousness are not met because the teachings of the Orava (U.S. Patent Application Publication 2002/0071477), Bensaou et al (U.S. Patent No. 6,934,297), and Larsen et al (U.S. Patent No. 6,810,428) references, taken singly or in combination, do not teach or suggest all of the claim limitations recited in the Claims 48-50 and 60-62.

Applicants submit that Claims 48-50 and 60-62 are allowable over the cited references based on their dependencies upon claims 39 and 52 which claims were shown to be allowable above. In addition, Applicants submit that claims 48-50 and 60-62 are also independently patentable because they include limitations not taught or suggested by the cited reference.

Therefore, since some elements are missing from the Orava (U.S. Patent Application Publication 2002/0071477), Bensaou et al (U.S. Patent No. 6,934,297), and Larsen et al (U.S. Patent No. 6,810,428) references, a rejection of Claims 48-50 and 60-62 under 35 U.S.C. § 103(a) over Orava (U.S. Patent Application Publication 2002/0071477), in view of Bensaou et al (U.S. Patent No. 6,934,297), and further in view of Larsen et al (U.S. Patent No. 6,810,428) is improper and should be withdrawn.

D. Whether Claim 51 is allowable under 35 U.S.C. 103(a) over Orava (U.S. Patent Application Publication 2002/0071477) in view of Bensaou et al (U.S. Patent No. 6,934,297) further in view of Stanforth, U.S. Patent Application Publication 2003/0045295.

As expressly stated in Applicant's amendment of August 21, 2006, Applicants respectfully submit that the invention claimed in the present application and the Stanforth (U.S. Patent Application Publication 2003/0045295) application were, at the time the invention of the present application was made, both owned by and subject to an

obligation of assignment to the same entity, MeshNetworks, Inc. Therefore the rejection of Claim 51 under 35 U.S.C. 103(a) over Orava (U.S. Patent Application Publication 2002/0071477) in view of Bensaou et al (U.S. Patent No. 6,934,297) further in view of Stanforth, U.S. Patent Application Publication 2003/0045295 is improper and should be withdrawn.

For the reasons set forth above, Applicants submit that the Examiner has incorrectly rejected Claims 39-62 and request that the Board withdraw the rejections.

Respectfully submitted,

Enclosures

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Motorola, Inc.
8000 West Sunrise Boulevard
Law Department – MD1610
Plantation, Florida 33322
Customer Number: 24273

By: /Randi L. Karpinia/
Randi L. Karpinia, Esq.
Attorney of Record
Reg. No. 46,148
Tel: 954-723-6449
Fax: 954-723-3871
E-Mail: docketing.florida@motorola.com

VIII. CLAIMS APPENDIX

39. An adhoc multi-hopping wireless communications network comprising:

a plurality of nodes communicatively coupled within the adhoc wireless communication network, wherein each of the plurality of nodes has an operational state comprising:

an off state,

an active and relay state, or

an active and non-relay state,

the plurality of nodes comprising one or more categories of nodes, wherein each category of node defines the operational state for each node within the category, and

further wherein, the operational state of each of the plurality of nodes can be dynamically determined by one or more immediate neighbor nodes during route establishment dependent upon the category of the originating node.

40. An adhoc multi-hopping wireless communications network as claimed in claim 39, wherein each of the plurality of nodes comprises a mechanism for receiving one or more user configuration information, and further wherein the operational state of each of the plurality of nodes is further determined using the user configuration information.

41. An adhoc multi-hopping wireless communications network as claimed in claim 39, wherein each of the plurality of nodes comprises a mechanism for receiving one or more network configuration information, and further wherein the operational state of each of the plurality of nodes is further determined using the network configuration information.

42. An adhoc multi-hopping wireless communications network as claimed in claim 39, wherein each of the plurality of nodes is further adapted to receive one or more economic credits for relaying one or more packets,

wherein each of the plurality of nodes includes an associated current number of economic credits and an associated maximum number of economic credits, and

further wherein the operational state of each of the plurality of nodes is further determined by comparing the associated current and maximum number of economic credits.

43. An adhoc multi-hopping wireless communications network as claimed in claim 39, wherein each of the plurality of nodes is adapted to inform one or more other immediate neighbor nodes of the operational state.

44. An adhoc multi-hopping wireless communications network as claimed in claim 43, wherein each of the plurality of nodes is further adapted to inform the one or more other immediate neighbor nodes of a change in the operational state.

45. An adhoc multi-hopping wireless communications network as claimed in claim 39, wherein each of the plurality of nodes is further adapted to provide configuration information to one or more other immediate nodes for use in the one or more immediate nodes determining the operational state of the node.

46. An adhoc multi-hopping wireless communications network as claimed in claim 39, wherein the operational state is set to an active and non-relay state for each immediate neighbor node comprising a non-network infrastructure component; and wherein the operational state is set to an active and relay state for each immediate neighbor node comprising a network infrastructure component.

47. An adhoc multi-hopping wireless communications network as claimed in claim 39, wherein an immediate neighbor node is a group member of a closed user group, and wherein the operational state of the immediate neighbor node is set to an active and non-relay state when the category of the originating node comprises a non-group member of the closed user group; and wherein the operational state of the immediate neighbor node is set to an active and relay state when the category of the originating node comprises a group member of the closed user group.

48. An adhoc multi-hopping wireless communications network as claimed in claim 39, wherein each of the plurality of nodes has an associated node class, and further wherein the operational state of each immediate neighbor node is determined by the relationship between the originating node's associated class and the immediate neighbor node's associated class.

49. An adhoc multi-hopping wireless communication network as claimed in claim 48, wherein the operational state of the immediate neighbor node is set to an active and relay state when the immediate neighbor node's associated class comprises a class selected from a class group comprising a line powered device, a high remaining battery life device, a least interference device, a least energy device, and a high performance device.

50. An adhoc multi-hopping wireless communication network as claimed in claim 48, wherein the operational state of the immediate neighbor node is set to an active and non-relay state when the immediate neighbor node's associated class comprises a class selected from a class group comprising a battery powered device, a low remaining battery life device, a high interference device, a high energy device, and a low performance device.

51. An adhoc multi-hopping wireless communications network as claimed in claim 39, wherein each of the one or more immediate neighbor nodes comprises a neighbor table stored in a memory for use in determining the operational state of the plurality of nodes.

52. An adhoc multi-hopping wireless communications network comprising:

a plurality of nodes communicatively coupled within the adhoc wireless communication network, wherein each of the plurality of nodes has an operational state comprising:

an off state,

an active and relay state, or

an active and non-relay state,

wherein each of the plurality of nodes is adapted to:

determine its operational state, and

inform one or more immediate neighbor nodes of the operational state .

53. An adhoc multi-hopping wireless communications network as claimed in claim 52, wherein each of the plurality of nodes is further adapted to inform the one or more immediate neighbor nodes of a change in the operational state.

54. An adhoc multi-hopping wireless communications network as claimed in claim 52, wherein each of the plurality of nodes comprises a mechanism for receiving one or more network configuration information, and further wherein the operational state of each of the plurality of nodes is further determined using the network configuration information.

55. An adhoc multi-hopping wireless communications network as claimed in claim 52, wherein each of the plurality of nodes comprises a mechanism for receiving one or more user configuration information, and further wherein the operational state of each of the plurality of nodes is further determined using the user configuration information.

56. An adhoc multi-hopping wireless communications network as claimed in claim 52, wherein each of the plurality of nodes is further adapted to receive one or more economic credits for relaying one or more packets, and

wherein each of the plurality of nodes includes an associated current number of economic credits and an associated maximum number of economic credits, and

further wherein the operational state of each of the plurality of nodes is further determined by comparing the associated current and maximum number of economic credits.

57. An adhoc multi-hopping wireless communications network as claimed in claim 52, wherein each of the plurality of nodes is further adapted to inform the one or more other immediate neighbor nodes of a change in the operational state.

58. An adhoc multi-hopping wireless communications network as claimed in claim 52, wherein the operational state is set to an active and non-relay state for each of the plurality of nodes comprising a non-network infrastructure component; and wherein the operational state is set to an active and relay state for each of the plurality of nodes comprising a network infrastructure component.

59. An adhoc multi-hopping wireless communications network as claimed in claim 52, wherein at least one of the plurality of nodes is a group member of a closed user group, and wherein the operational state of the at least one of the plurality of nodes is set to an active and non-relay state when the category of a packet originating node comprises a non-group member of the closed user group; and wherein the operational state of the at least one of the plurality of nodes is set to an active and relay state when the category of a packet originating node comprises a group member of the closed user group.

60. An adhoc multi-hopping wireless communications network as claimed in claim 52, wherein at least one of the plurality of nodes has an associated node class, and further wherein the operational state of each of the at least one of the plurality of nodes is determined by the relationship between a packet originating node's associated class and the at least one of the plurality of node's associated class.

61. An adhoc multi-hopping wireless communication network as claimed in claim 60, wherein the operational state of the at least one of the plurality of nodes is set to an active and relay state when the at least one of the plurality of nodes' associated class comprises a class selected from a class group comprising a line powered device, a high remaining battery life device, a least interference device, a least energy device, and a high performance device.

62. An adhoc multi-hopping wireless communication network as claimed in claim 60, wherein the operational state of the at least one of the plurality of nodes is set to an active and non-relay state when the at least one of the plurality of nodes' associated class comprises a class selected from a class group comprising a battery powered device, a low remaining battery life device, a high interference device, a high energy device, and a low performance device.

IX. EVIDENCE APPENDIX

No evidence has been submitted pursuant to 37 C.F.R. §§ 1.130, 1.131, or 1.132, entered by the examiner and relied upon by the appellant in the appeal, or relied upon by the examiner as to grounds of rejection to be reviewed on appeal.

X. RELATED PROCEEDINGS APPENDIX

No decisions have been rendered by a court of the Board in any proceeding identified pursuant to paragraph (c)(1)(ii) of 37 C.F.R. § 41.37.